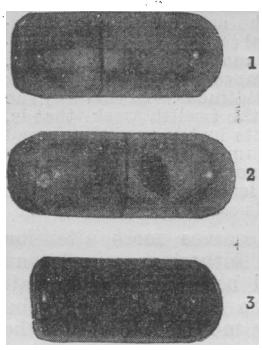
view at the show-rooms of Messrs. Newton and Co. (3, Fleet Street, E.C.). With this apparatus the exposure can scarcely be measured by time intervals; it is equivalent to one single discharge through the tube, occupying perhaps one-hundredth of a second. The new apparatus appears to be simply the logical outcome of modern development in induction coils, and the lightning radiography in this instance is made possible by the employment of a very large coil of special construction through which a heavy continuous current is passed. The bursting of a special fuse, which is readily renewable at a trifling cost, causes the break which provides the powerful single flash. In some excellent radiographs taken with this apparatus and an intensifying screen small pathological changes in the lungs were visible, and the heart outline was beautifully rendered. Of a pattern with this arrangement and bearing the same trade-name is a mercury interrupter on the centrifugal principle, with some interesting modifications.

A Simple Test for the Efficiency of Sterilization.

Mr. ERNEST W. HEY GROVES, F.R.C.S. (Bristol), writes: One of the great drawbacks of the modern high-pressure steam sterilizer is that it is necessarily somewhat complex and liable to get out of order without giving any readily noticeable change in the things taken from it. If it should be in the charge of a nurse or porter who does not properly understand it, or who is not very conscientious in working it, the whole mechanism may be at fault without any one being aware of the fact. The dressings and swabs look just the same as ever, and are handed to the surgeon—it may be hot from the machine—and yet only the outer coverings have been warmed, and no penetrating sterilization has taken place. This danger occurs especially at small hospitals or nursing homes, where a small instrument is used and often worked by different nurses. The things are put into the machine, the gas or steam is turned on, and in a certain time they are taken out. The exact fitting of the door of the oven, the attainment of a definite pressure, the proper working of the vacuum apparatus, are matters which do not appeal to the average nurse's mind as being very important. And yet these are the essentials without which we might just as well take our things straight from the laundry, use them for operations, and let the tissues find out for themselves whether they contain any bacteria. The great expense and trouble necessitated by dry sterilization are well worth while if only we can readily make sure that everything has been carried out without a flaw. I have devised a simple contrivance for carrying out an efficient test of proper sterilization which meets this need. A compressed tablet is made containing 10 grains of acetanilide, in the centre of which is a minute quantity of methyl blue. This is enclosed in a small glass capsule about 1 in. long. Acetanilide melts at a temperature of 112° C., and it takes about fifteen minutes' exposure to this temperature to melt the 10 grain tablet sufficiently for the whole mass to become uniformly mixed with the blue colour. Hence the capsule provides both a qualitative and a quantitative test of temperature. If it is placed in the centre of a large mass of dressings, and after sterilization it is found to have its contents completely fused into a homogeneous mass, it is a proof that the very centre of the dressings has been raised to a temperature of at least 112° C., and that this has been maintained for at least a quarter of an hour. For private work it is a great convenience to have a set of dressings, towels and swabs, gowns and gloves ready sterilized for any emergency. Such an outfit can be contained in a single canvas bag lined with cotton-wool; or better still can be arranged in two such bags. These are tied together, having a mass of cotton-wool, containing one of the capsules I have described, in its midst, between the two bags. Done up in this way they are given to the nurse to sterilize, and when they are returned, the bags are separated, the capsule taken out, and the efficiency of the sterilization positively ascertained. Up to the present I have only been able to obtain the capsules at a price of 2½d. each, but if their use should be adopted extensively I feel sure that some reliable druggist will be found who will be able to supply them at much lower price.



1, Original capsule; 2, after raising to 112° C. for five minutes; 3, after raising to 112° C. for fifteen minutes.

THE SWEDISH SYSTEM OF REMEDIAL EXERCISES AND MASSAGE AS A MEANS OF TREATMENT.

HAVING determined to test the beneficial results accruing from the Swedish mode of treatment, I spent several months in Stockholm studying medical gymnastics and massage under Professor Wide and Dr. Arvedson, while at the same time I took part in the pedagogical work carried on at the Royal Gymnastic Central Institute. At that place I found that one hour's daily practice with the young army officers improved one's own physique in a very surprising and pleasurable manner. The course planned out there for the students is a very thorough and detailed one, its length being two years for women and three for men. The latter must take military gymnastics in addition, which consist in fencing with the foil and sabre, bayonet exercise, riding, and other military exercises.

Daily instruction in anatomy, practical anatomy, physiology, elementary pathology, and the theory and practice of medical gymnastics is given by the teachers. All students must take the pedagogical or educational gymnastics. There are separate classes for each year. The juniors begin with the easier movements, which gradually increase in severity, strength, and complication. When they become seniors—that is, in their second year—they commence where they left off the previous year, the exercises becoming increasingly difficult and strong, balancing movements being introduced.

To secure that the exercises shall be of a progressive nature and definite order—characteristics of the Swedish system—the programme is changed every week. Thus every Monday the aspirant for the title of Gymnastic Director looks forward to a new set of exercises to be practised for that week.

The order of a table is:

1. Introductory exercises, facings, and class formations.
2. Leg exercises.
3. Span bending, or arch flexions of the trunk.
4. Heaving exercises to increase respiration.
5. Balancing exercises, requiring high powers of co-ordination.
6. Dorsal exercises, giving a good carriage to the shoulders, and at the same time increasing respiration.
7. Abdominal exercises, which strengthen the muscles of the abdomen, thereby correcting any tendency to pot-belly. They assist the digestive organs in their work, preventing constipation, and tone up the natural support of the viscera.
8. Lateral exercises. These give suppleness to the carriage of the body, are powerfully corrective as regards the spine in both lumbar and dorsal regions, ensuring flexibility and assisting to counteract tendencies to lateral curvature. These movements, if persevered in, tend to reduce the waist measurement and any tendency to corpulency. (The Swedish army officers have probably the smallest waists of any class of men in Europe.)
9. Marching, marching on the toes, and running exercises. These educate the body to a free and easy motion in walking, to proper movements of the hips, and the correct manner of lifting and placing down the feet.
10. Jumping and vaulting. All the muscles of the body are brought into play from these exercises. They perfect resource and courage, presence of mind, and quickness of movement.
11. Finishing exercises, which always comprise those of breathing.

Each student must devote at least three hours daily to the patients, of whom he has one or more coming daily for treatment. The patient is first seen by a physician, who writes a gymnastic prescription for one of the students to carry out.

In diseases of the circulatory organs medical gymnastics have proved of marked service in mitral incompetence and stenosis, aortic incompetence, dilatation and hypertrophy of the heart, chronic myocarditis and fatty heart. Ling himself taught and used movements and massage for the circulation. A systematic programme is gone through, consisting of regulated movements and massage, beginning with the lower extremities. In a case of diffused cyanosis, shortness of breath, oedema of the extremities, and even albuminuria disappeared after only a fortnight's gymnastic treatment. Remedial gymnastics are of great use during the time that compensation of the heart is developing.

Medical gymnastics are a powerfully prophylactic agent in some diseases of the lungs, in that they help the expansive power of a badly-shaped chest and increase the interchange of gases in the lungs. Such common

maladies, as chronic bronchitis, asthma, emphysema, adhesions after pleurisy, and croupous pneumonia, are often benefited by a course of exercises.

In disease of the digestive organs medical gymnastics and massage play a very important part. They are a specific in chronic constipation. Medical gymnastics are usually all that is needed to effect a cure, but in some severe cases they should be combined with thorough abdominal massage. To cite only one case of Wide's:

Intestinal Atony with Resulting Constipation.

A man aged 73 had suffered from chronic constipation for many years. Laxatives and enemata had but little effect, but kneading and effleurage along the colon easily dislodged the faecal masses. He was treated daily with abdominal massage, sacral beating, and knee up-drawing and down-pressing, etc. The faeces soon became formed and soft, and were passed without trouble after the nervous innervation had been toned up and the intestinal muscles strengthened by abdominal massage. The improvement continued for some years afterwards, the patient having natural daily stools.

Medical gymnastics and massage have proved of service in catarrhal conditions of the digestive organs, dilatation of the stomach, chronic diarrhoea, prolapse of rectum, haemorrhoids, congestion of liver, and pruritus ani; while the effect of this system of reducing obesity has long been known.

In the special infirmary for nervous diseases in Stockholm medical gymnastics and massage are extensively used with good results.

Locomotor ataxia, progressive muscular atrophy, and anterior poliomyelitis have been the diseases chiefly treated with gymnastics and massage. In chorea, tremor, and tabes dorsalis, where there is inco-ordination, remedial movements are of great importance, especially double-sided ones. Gymnastic treatment has been of marked value in diseases of the motor nerves, paresis, cramp, and neuritis, and in neuralgia and anaesthesia (sensory nerves). The following case, related by Wide, may serve as a lesson:

Right-sided Posterior Interosseous Nerve Paresis.

A man aged 29 was treated in 1891. The paresis had showed itself in November, 1890, after fracture of the lower end of the humerus involving the nerve in a callus formation, and the nerve itself showed reaction to degeneration. Gymnastic and massage treatment was given twice daily for twenty-eight days, the aim being the absorption of callus in the first place, and mechanical nerve irritation in the second place. This was so far satisfactory that the patient was able to resume his occupation (clerk).

This case is of special interest on account of the rapid improvement which took place, and of the fact that, though the nerve did not respond to electrical stimulus, it did to mechanical excitation.

Sciatica has yielded good results to movements and massage. One clinical case treated by me under Professor Wide:

The patient was a woman aged 35; the treatment given was deep friction massage and strong effleurage for an hour daily for about thirty days, and a Tallbarrsbad (pine-leaves bath) every other day. In addition to this, active and passive movements for the sciatica were also given, such as active nerve-stretching in various ways—for example, at the peg-post, etc. With this treatment the patient rapidly improved, and at the end of the cure she confessed to "feeling very much better," and, as she expressed it, "felt lighter, and as though a lot of stuff had been squeezed out of her."

Movements and massage in cases of recent fracture, distortions, dislocations, acute synovitis, stiff joints, etc., have been advocated chiefly by Sir William Bennett in this country and M. Lucas-Championnière in France. Stockholm surgeons begin massage immediately after the occurrence of the injury, or as soon as the swelling begins to subside. With simple fractures, say of the radius, the bandage is removed, when gentle effleurage and passive movements are given daily for the wrist and finger joints. The gentle stroking movements given over the muscles in the region of a fracture greatly allay the pain or spasm set up by the contracted muscles. In the like manner with sprains—for example, in the ankle-joint—passive movements and massage help the stagnant circulation and prevent the formation of adhesions and consequent stiffness.

Swedish gymnastics have played a prominent part in the treatment of deformities, such as lateral curvatures of the spine, kyphosis, sloping and uneven shoulders, lordosis, or pot-belly, in the different varieties of talipes or club foot, in genu valgum, genu varum, genu recurvatum, and in torticollis. Perhaps more remarkable successes have resulted in lateral curvature than any other complaint. The object is to increase strength and development, and at the same time to shorten the muscles on the convex side. Massage of the back muscles must be given at each treatment. In Sweden three examinations are made yearly of public school children for the detection of incipient scoliosis. In this way early cases are found and the child put under proper gymnastic training without delay. Swedish medical gymnastics aim at increasing the mobility of the spine, the straightening and stretching it, checking of deformities of the chest and spine, and improvement of the general constitution through the development of the muscles, ligaments, bones, and joints.

As an illustration of the beneficial method of the treatment, two examples may be given; the first case was reported by Wide, and the second treated by myself in Dr. Arvedson's clinic.

1. *Right Convex Scoliosis in a Boy 14 Years Old.*—The vertebral column showed a deviation of 16 mm. in the middle dorsal region, the rotation was not inconsiderable, and the spine was freely mobile. The patient was preparing to enter the Naval College, and would have been rejected had not his deformity been cured. He could only sacrifice twenty minutes daily for gymnastics, but industriously practised home movements, and consequently succeeded after only four months' treatment in being accepted as without defect at the above school.

2. *Right Convex Lumbar Scoliosis, Left Convex Dorsal Scoliosis.*—A small, badly developed, thin and knowing child of 8 years, who looked older than her age. The dorsal deviation shown by Schulthess's apparatus was 18 mm. and the lumbar 21 mm., the spine being fairly flexible, but more so in the dorsal than in the lumbar region. For the first two weeks the patient had a general gymnastic treatment to improve the general health and prepare her for the harder and more complex movements to meet her individual case. At the commencement of the third week special movements were given, together with massage of the back muscles at the beginning, and also at the termination of each treatment. In this way she rapidly improved, for at the end of the twelfth week, that is, ten weeks since the special movements had begun, the dorsal deviation measured 7 mm. and the lumbar 11 mm; it will be observed that the dorsal curve improved more than the lumbar in proportion. As the child had to leave Stockholm and the treatment had to be discontinued, this case was lost sight of.

I think that this treatment deserves more attention from the profession than it has hitherto received, and that a special department should be inaugurated in all large general hospitals and certain special ones for the carrying out of this treatment by medical students who have received instruction in the subjects of medical gymnastics and massage. At the present moment there is only one large general hospital I know of in London which has a special department of this nature and presided over by a qualified medical man who has received the necessary training in this work.

BIBLIOGRAPHY.

Sir W. H. Bennett: *Movements and Massage in Recent Fractures. Handbook of Physical Training, R.N.* Wide: *Handbook of Medical and Orthopaedic Gymnastics.* Tait McKenzie: *Exercise in Education and Medicine.* Arvedson: *Anteckningar i Sjukdomslära for Sjukgymnaster.* Kleen: *Handbok i Massage och Sjukgymnastik.*

FREDK. F. MIDDLEWEEK, L.R.C.P., L.R.C.S.Edin.

THE Canadian Red Cross Society, which was founded in 1896 and reorganized and incorporated some two years ago, is now fully affiliated to the British Red Cross Society, and will do its work on corresponding lines. The society has its head quarters at Toronto, and its report for 1910 shows that good progress is being made with the formation of branches in the various provinces of Canada. Tribute is paid in the report to the excellent work done for the society by Dr. Charles A. Hodgetts, who acted as its general secretary for many years. He has now been succeeded by Dr. Charles R. Dickson.

THE Vigilance Committee of the French Congress of Medical Practitioners has decided to send the following questions to the medical syndicates throughout the country: (1) Number of practitioners in your medical area; increase or diminution during the last twenty years? (2) Population; increase or diminution during the last twenty years? (3) Is there overcrowding of the profession in your medical area? (4) How is limitation to be effected? Competitive examination for admission as students of medicine. Examinations at the beginning of the curriculum. Examinations during the course of study; preliminary examinations; what examinations for the degree of bachelor (arts and science)? Personal observations.